

CLAIMS:

1. A data transmission system for off-board communications to and from a railroad train comprising:

a central processing unit to which information relating to operation of the train is received and formatted for transmission to a receiving site remote from the train;

a radio to which a signal for transmission to the receiving site is supplied by the central processing unit, the radio operating within a specified frequency range;

at least two antennas to each of which a transmission signal produced by the radio is sent for broadcasting by the antennas to a receiver located at the receiving site; and,

the central processing unit selecting which of the antennas over which the transmission signal is broadcast at any one time.

2. The data transmission system of claim 1 further including a signal splitter by which a transmission signal produced by the radio is divided, the signal splitter supplying transmission signals to each of the antennas for transmission thereby to the receiving site on a selective basis which is a function of signal magnitude and phase weighting whereby the transmission signal is broadcast by the antennas.

3. The data transmission system of claim 2 wherein the supply of a transmission signal by the signal splitter to the antennas is controlled by the central processing unit as a function of the signal magnitude and phase weighting.

4. The data transmission system of claim 1 further including a performance/availability checker.

5. A data transmission system for terminal diversity for off-board railway communications from a railroad train comprising:

first and second radios each operating within a specified frequency range;

a separate antenna connected to each radio and through which a transmission signal is separately transmitted to a receiving site or received from the site;

at least two receivers located at the receiving site for receiving signals broadcast transmitted through the respective antennas;

a recombining unit for combining the transmissions received by each receiver so to produce a complete signal transmission; and,  
a controller for controlling the selection of antennas for communication.

6. The data transmission system of claim 5 wherein the controller includes a central processing unit to which information relating to operation of the train is received and formatted for transmission to the receiving site; and,

a signal divider for splitting an output signal from the central processing unit and supplying the signal to each radio.

7. The data transmission system of claim 6 wherein the signal divider is a multiplexer.

8. The data transmission system of claim 6 wherein the transmission signal broadcast from one antenna is different from the transmission signal broadcast from the other antenna.

9. The data transmission system of claim 5 further comprising a performance/availability checker.

10. A data transmission system for terminal diversity for off-board railway communications from a railroad train comprising:

a central processing unit to which information relating to operation of the train is received and formatted for transmission to a receiving site;

first and second radios to which an output signal from the central processing unit is directed;

a first antenna to which a transmission signal from one of the radios is directed for broadcasting the transmission signal to the receiving site;

a second antenna to which a transmission signal from the other radio is directed for broadcasting the transmission signal to the receiving site;

first and second receivers located at the receiving site for receiving the broadcast transmission signals;

5 a recombining unit for combining the transmissions received by each receiver so to produce a complete signal transmission; and,

wherein the central processing unit selects which of the antennas over which a transmission signal is broadcast at any one time.

10 11. The data transmission system of claim 10 further comprising a signal divider to which an output signal from the central processing unit is directed, the signal divider splitting the output signal and separately providing it to each of the radios.

15 12. The data transmission system of claim 10 wherein the frequency at which a signal is broadcast from one of the antennas is different from the frequency at which the signal is broadcast from the second antenna.

13. The data transmission system of claim 12 wherein the signal provided from one of the radios for transmission by its associated antenna has a modulation different from that of the signal provided by the other radio for transmission by its associated antenna.

20 14. The data transmission system of claim 13 wherein the signal provided from one of the radios for transmission by its associated antenna has a broadcast protocol different from that of the signal provided by the other radio for transmission by its associated antenna.

25 15. The data transmission system of claim 10 further comprising a performance/availability checker.

16. The data transmission system of claim 10 further comprising additional antennas for broadcasting a transmission signal to a selected receiver.

17. The data transmission system of claim 16 wherein each signal being broadcast by one of the antennas is of a different frequency, modulation, and broadcast protocol than a signal broadcast from one of the other antennas.

TO: "4030" 40304360